Torque specifications

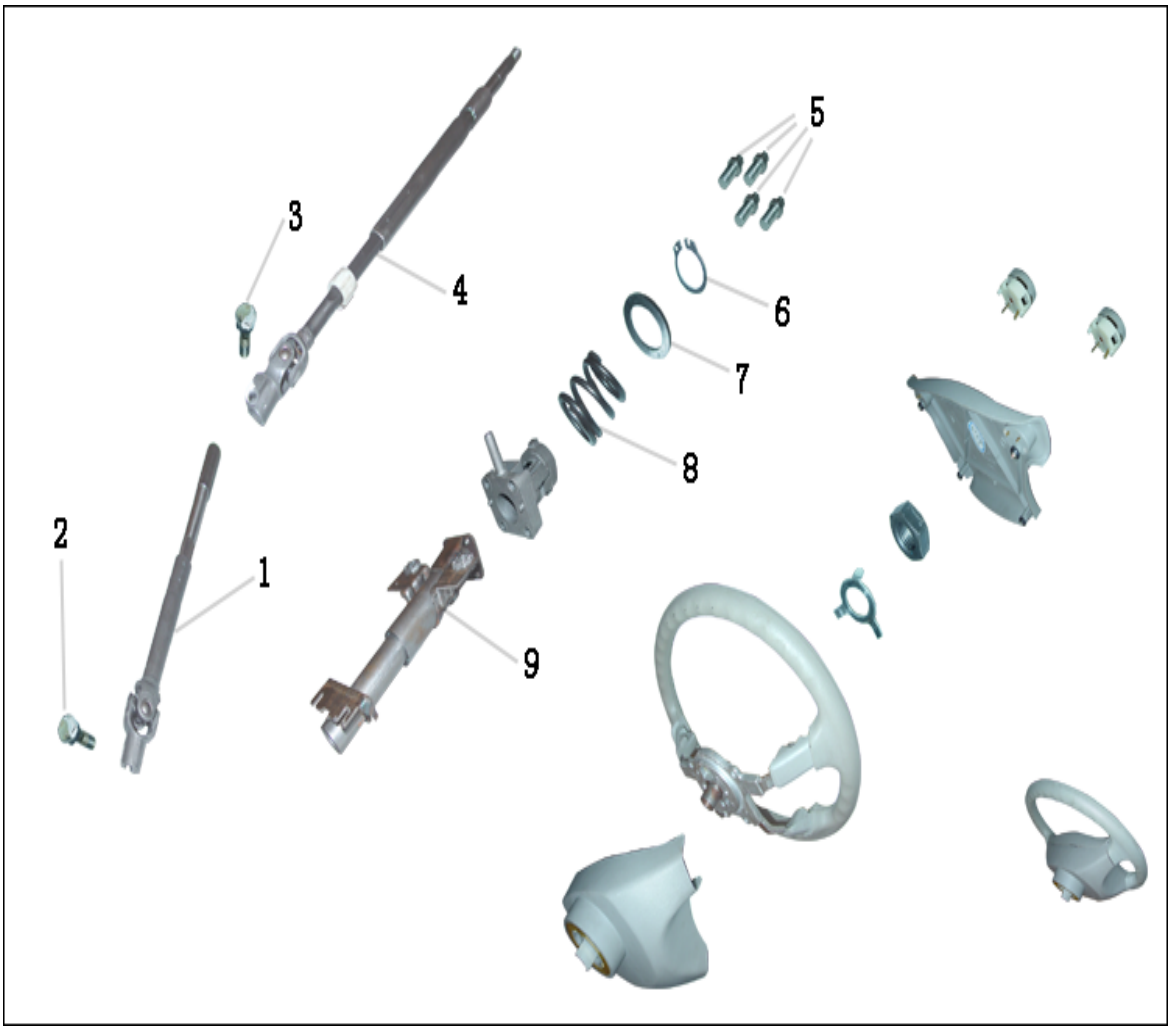
Application	Specifications
Steering box installation nut	70-80Nm
Tie rod and rack fixture nut	63-77Nm
Tie rod end plane and steering knuckle fixture nut	32-38Nm
Power steering pump installation bolt	22-28Nm
Steering column and crosstree	13-17Nm
Steering knuckle and steering box	22.5-27.5Nm
Steering wheel and steering shaft nut	27-33Nm
Steering shaft flange clamping bolt	22.5-27.5Nm

Nipple torque specifications

Application	Specifications
Power steering oil hosepipe and power steering pump socket	2-3Nm
Power steering oil hosepipe and power steering storage tank socket	2-3Nm
Power steering high pressure hosepipe and power steering pump socket	20-35Nm
Power steering high pressure hosepipe and power steering box inlet nipple	27-33Nm
power steering box oil inlet and power steering box socket	27-33Nm
power steering box gusher pipe and power steering box socket	27-33Nm
power steering box gusher pipe and power steering oil return pipe socket	27-33Nm

Manipulate part overhaul

Steering wheel and steering column decompose view



1. Steering universal coupling shaft and universal coupling； 2，3. Bolts；
4. Steering core shaft assembly； 5. Bolts； 6. Jump ring； 7. Washer； 8. Spring
9.Steering column

Steering wheel free-play inspection

In the assembled mode, check the free-play of the steering wheel while the car is driving in straight line. The free play of the steering wheel in the circumferential direction should be no larger than 0~30mm. In the case that the free play goes beyond the specified value, the following items should be checked to see: if the joint of the steering horizontal lever is worn out (when a torque of over 0.2N.m is applied, the joint should be moved); if the lower ball knuckle is worn out; if the steering shaft universal coupling is worn out; if the steering small gears or gear rack is worn out or damaged and if the fixture or joining of the parts is loose.

Control institute

Steering wheel Removal

Remove the battery jumper wires; remove the steering wheel label cover assembly; remove the steering shaft screw nut. To facilitate positioning in the installation, matching signs are to be made on the steering wheel and the steering shaft, then remove the steering wheel with the special purpose remover.

Removal of the steering column assembly

1) Remove the wire bundle of the steering wheel cover and horn switch.

2) Remove the fastening screw nuts the steering wheel.

3) Remove the combination switch assembly.

4) Remove the joining bolt for the steering column and steering power tilt.

5) Remove the four fastening screws for the steering column.

Inspection

1、The steering shaft and universal coupling: check to see if the steering shaft is bent, or if the spine is damaged; check to see if there are any cracks on the universal coupling, or if the free play is too large. If so, replace the universal coupling assembly.

2、Steering column: check all the covers of the steering column stand, with the spaces from the slot bottom within 1.00mm. If not, make proper replacements. Check to see if the steering column is bent, cracked or deformed.

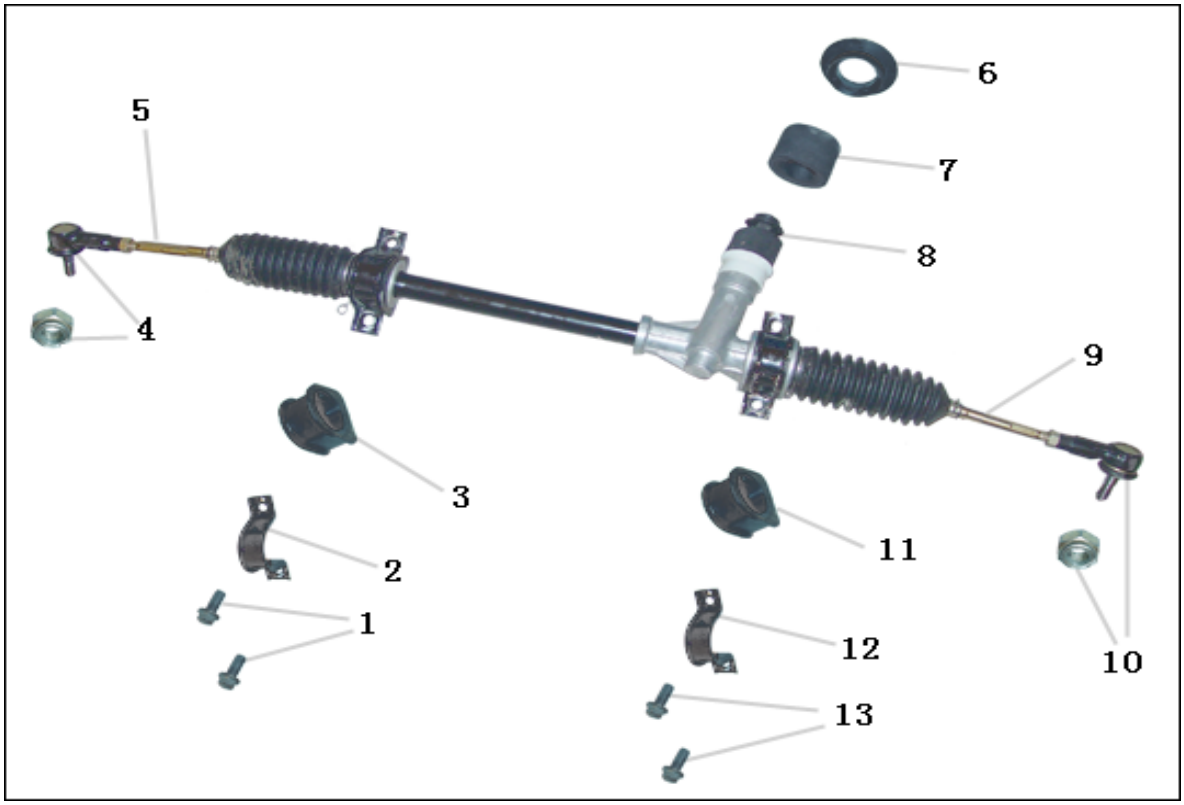
Installation

The order of installation steps is just the opposite to that for removal.

Attention: Apply alkali-based lubricating grease on the interior slot of the rubber sleeve of the steering column, and tighten the associated bolts and screw nuts with the specified torque.

Manual Steering Gear

Manual steering gear components



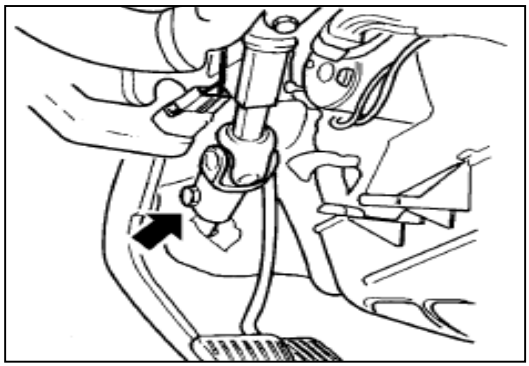
1. Bolts; 2. Right supporting frame; 3. Right supporting frame sleeve;4. Right steering horizontal lever joints assembly; 5. Right horizontal lever;6. Steering gear washer; 7. Gear bearing stopper; 8. O-shaped ring; 9. Left horizontal lever; 10. Left steering horizontal lever joints assembly; 11. Left supporting frame sleeve; 12. Left supporting frame; 13. Bolt

II、Removal of power steering gear assembly

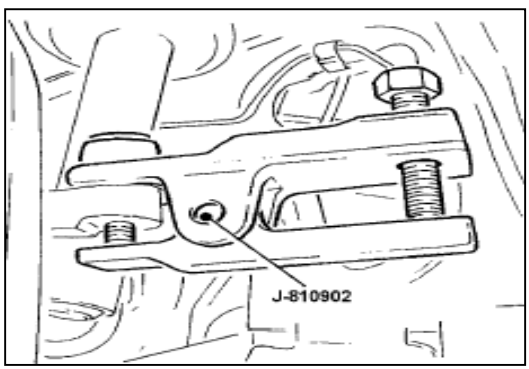
(I)Removal

Disassembly procedure

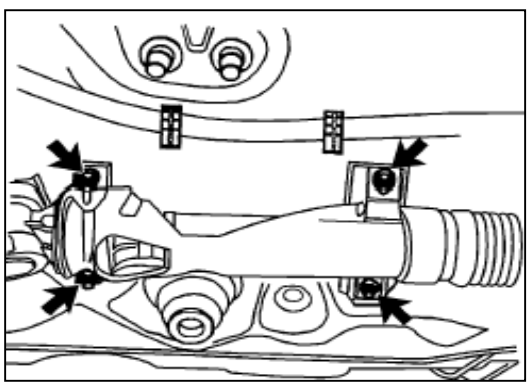
1. Put steering wheel forward and lock steering, remove steering shaft.



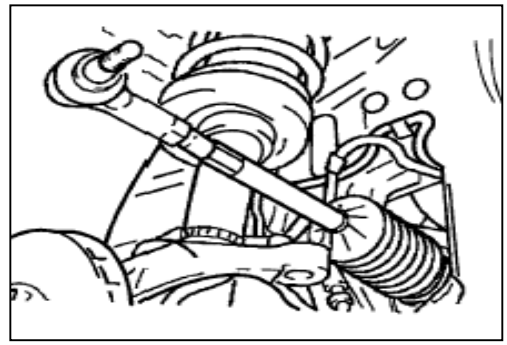
2. Loosen the nuts on two ends of steering transverse lever and push out the ends of lever from steering node.



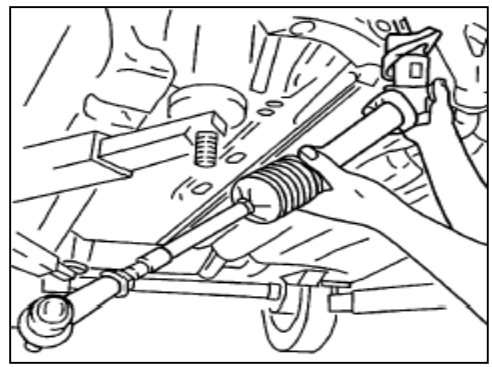
3. Loosen the support and remove out.



4. Turn steering pivot left into gap of wheel, pull the lever into engine compartment.

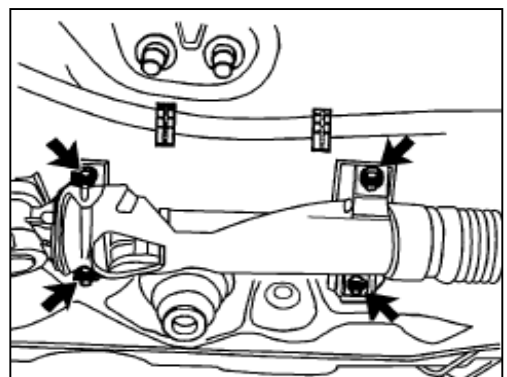


5. Push down and backwards to remove steering pivot.

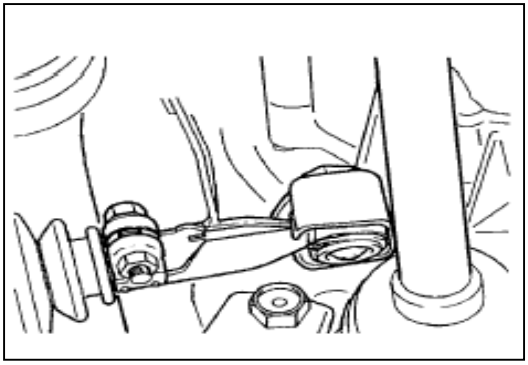


Steps of installation

1. Turn steering pivot upwards and push the pivot into gap of wheel
2. Insert pivot into front surround.
3. Screw the nuts between the support and front surround (not tighten).



Fixture
Install pivot on front surround with 70-80Nm.
Insert two ends of lever and screw with steering node.
(Use new nuts) with 32-38Nm.
4.Put the pivot forwards.
5. Install steering gimbal assembly.



Fixture
Screw steering gimbal assembly with 22.5-27.5Nm.

Description and operation
Instruction for steering system
The turning of steering will produce following actions:
1. The motion of steering will transfer to small gear
2. The motion of small gear will transfer to gear.
3. The teeth of small gear will be joggled with rack.
4. Rack will move under the force.
5. The force will transfer from transverse lever to steering node.
6. Steering knuckle turn wheel

Steering wheel and steering column
Common problem and treatment measure
Lock system incapable open lock

Problem	Measure
Lock core possible be damage	Check this part If need to replace part, refer " The ignition switch lock core replacing"
Ignition switch is wear out or damage	If need to replace part, refer " The ignition switch lock core replacing"

Lock system cannot lock u

Problem	Measure
Following parts possible be damage	Check unit If need to replace part, refer " The ignition switch lock core replacing"

On close and locking position, cannot pull out key

Problem	Measure
Ignition switch Lock core sets not correct	Demand adjust Lock core If need to replace part, refer " The ignition switch lock core replacing"
Lock core damage	If need to replace part, refer " The ignition switch lock core replacing"

On Close and locking position, demand larger locking force

Problem	Measure
Lock core damage	If need to replace part, refer " The ignition switch lock core replacing"

Steering wheel looseness

Problem	Measure
Steering wheel installation nut is loose	1.Check steering wheel installation , refer " The steering wheel replace" 2. To fix steering wheel installation nuts, refer " The steering wheel replace"
Steering wheel damage	1. Check steering wheel refer steering wheel replace 2. Steering wheel replace refer steering wheel replace
Steering intermediate shaft wear out or damage	Check steering intermediate shaft, refer " The power steering box replace" Replace steering intermediate shaft, refer " The power steering box replace"

Steering shaft check

Check steering shaft plastics pin whether sheering some symptom as follows Steering shaft from flank slight dash have chatter When turning steering wheel , can feel clearance

If steering shaft pin is no serious damage , advise to replace steering shaft

Steering column looseness

Problem	Measure
Steering column installation bolt loose	Screw bolts to specified torque
Steering column stay unit loose or damage	1. Check steering column assembly 2. Repair or replace steering column assembly

Steering wheel looseness

Problem	Measure
Steering wheel installation nut looseness	1. Check Steering wheel installation 2. Fix steering installation nut again
Steering wheel damage	1. Check steering wheel 2. Replace steering wheel
Steering intermediate shaft wear or damage	Check steering intermediate shaft Replace steering intermediate shaft r

Service guide

Replace ignition switch core

Removal

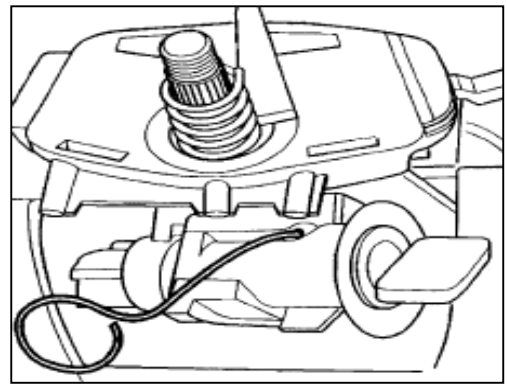
1. Remove plastic cover

2. Insert needle into lock hole and pull out the core from lock seat.

Steps of installation

1. Push the moving block to the direction shown in the figure.

2. Insert the core into the seat.



Steering shaft replace

Disassembly procedure

1. Remove steering wheel from shaft.

Points of attention

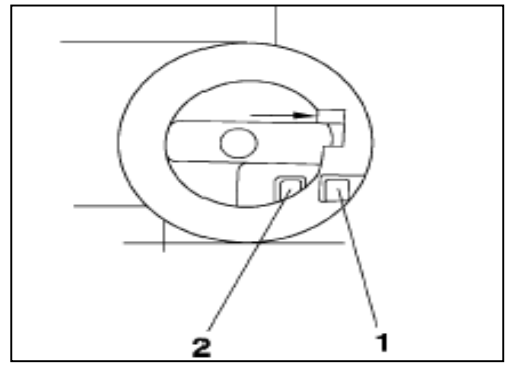
Don't knock steering when install or remove.

2. Loosen switch cover bolts. Remove signal switch (left) and wiper switch (right). Loosen the bolts between up/down shaft.

3.Loosen moving bolts on steering column under instrument cluster.

4. Remove steering column.

5. Remove up steering shaft



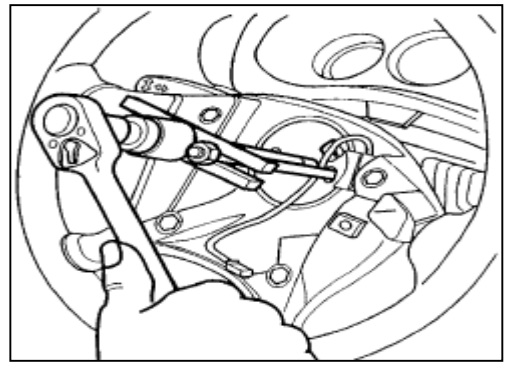
Points of attention

The lower guide bearing is a rubber bearing. Carefully remove the bearing.

Don't put steering lock in lock position.

Steps of installation

1. Insert new up shaft into steering column. Insert lower guide pipe into rubber bearing. Push the bearing to the end.
2. Connect separate block, support, lower support with bolts.
   Use new locknuts.



Fixture

Screw support and lower support with 13-17Nm.

3. Insert shaft flange and fix. Insert harness connector into signal switch and wiper switch. Fix signal switch cover.

Fixture

4. Install steering wheel in steering shaft

Screw bolts with 22.5-27.5 Nm.

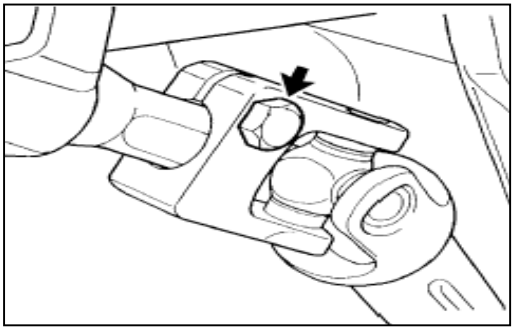
Screw bolts with 22.5-27.5 Nm.

Fixture

Screw steering nuts and shaft nuts with 27-33Nm.

5. Check forwards position of the steering institution.

3. Loosen the safety bolts.



Drill holes on safety bolts with electric screwdriver to pull out the bolts.

4. Remove steering column.

Points of attention

Don't turn ignition switch in LOCK position.

5. Remove up steering shaft and lower steering guide bearing from pillar.

6. Remove lower steering guide bearing from pillar.

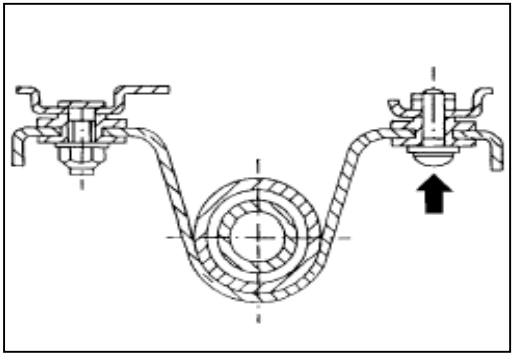
7. Replace steering column.

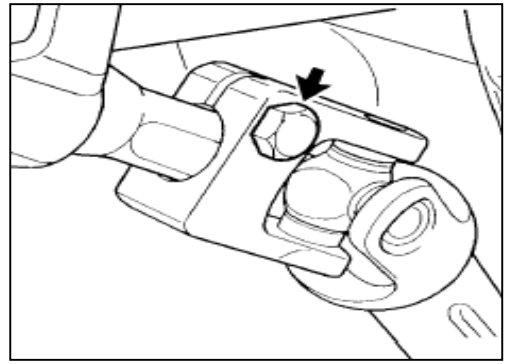
Steps of installation

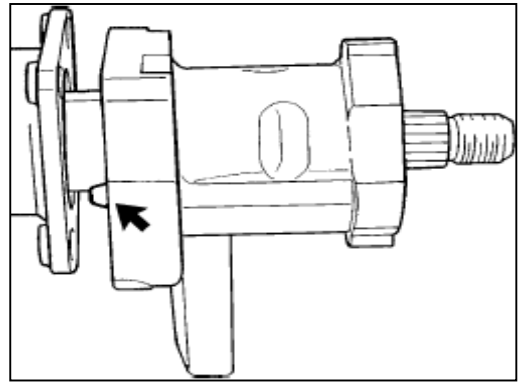
1. Insert steering column screw.

Points of attention

Note guide ears on shell.







Steering column replace

Points of attention

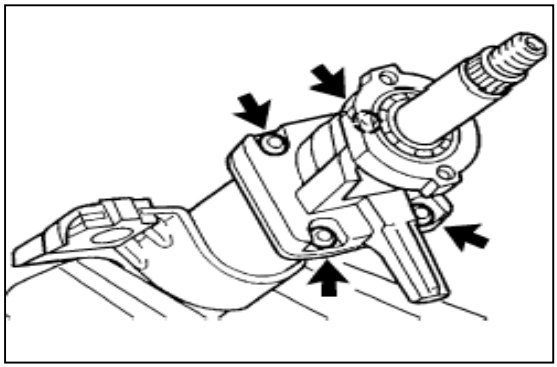
Observe safety regulation during operating air bag.

Remove procedure

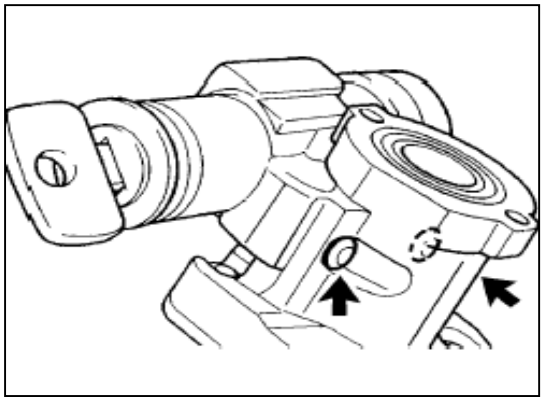
1. Remove air bag unit and the steering wheel with air bag.

2. Loosen the bolts.

2. Use 4 bolts to fix the shell and pillar.



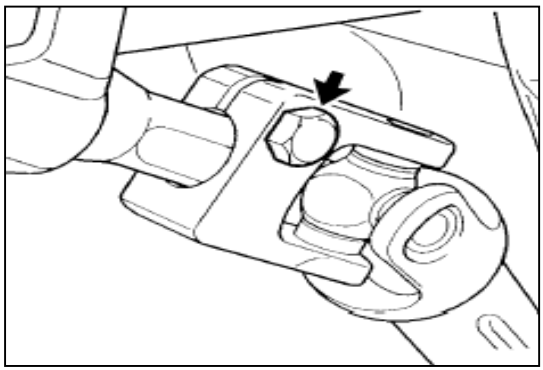
3. Use bolts to fix ignition lock shell and shaft shell.
4. Insert new shaft into pillar.



Points of attention

Don't turn steering and ignition lock in LOCK position.

5. Push guide bearing into pillar.
6. Insert and fix steering shaft.



7. Screw bolts.
8. Install steering wheel with air bag and air bag components.

Fixture

Screw shaft flange bolts to 22.5-27.5Nm.
Screw gear flange bolts to 22.5-27.5 Nm.
Screw steering wheel and shaft bolts to 27-33Nm.
10. Check forwards position for steering mechanics.

Description and operation

Description Steering wheel and steering column

Steering component can realize the functions besides of steering.

1. Steering column

Steering can absorb energy. When crashing happens, the pillar will shrink to reduce the probability to hurt driver.

2. Ignition switch and steering lock Ignition switch and steering lock can prevent stealing vehicle.

3. Multi-purpose operation lever

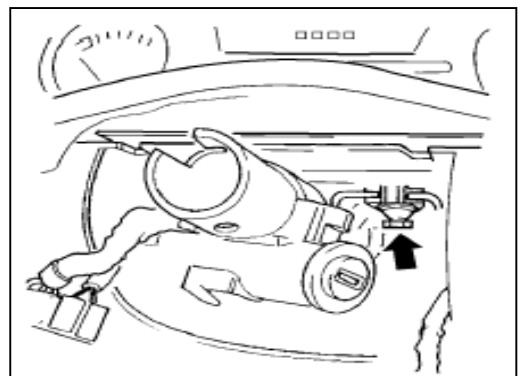
Multi-purpose operation lever can control following parts:

- High beam of head lamp
- Windshield wiper and cleaner

Remove and re-install steering pillar

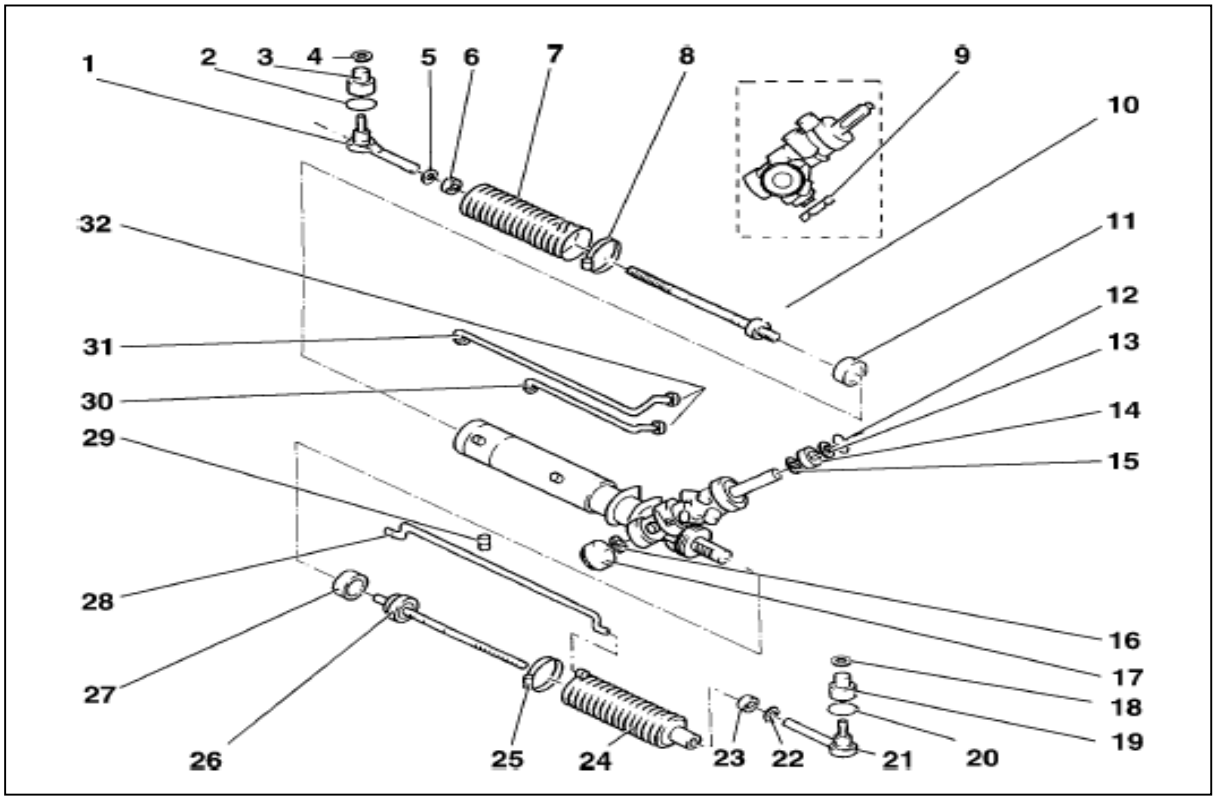
Use specified bolts to fix the pillar to make sure absorb engine action. Be careful to remove or transport the pillar.

1. The drawer to remove steering wheel is not recommended one.
2. The top of pillar is knock badly.
3. Something leans against the pillar.
4. The pillar falls off.



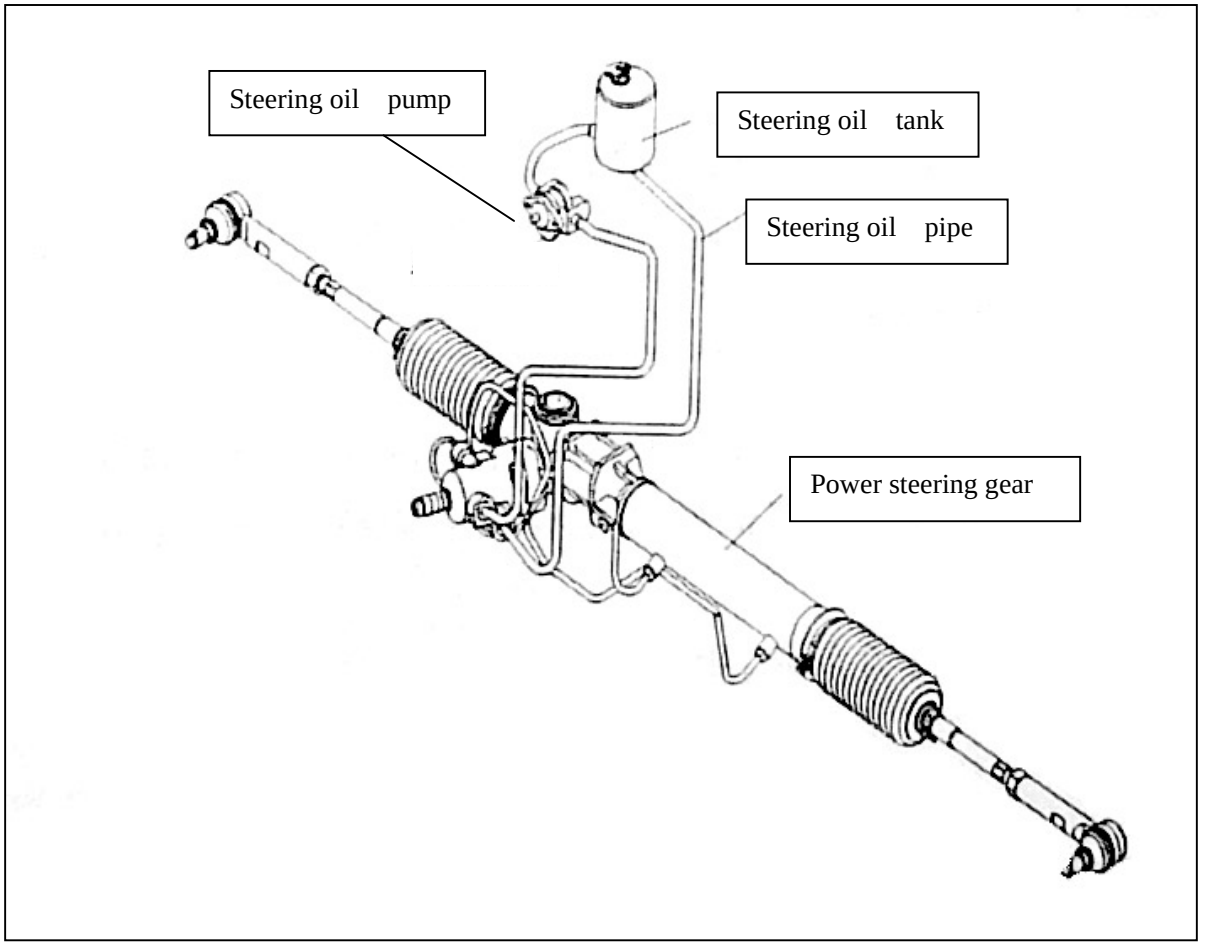
Power steering system

Exterior identify
Power steering box



(1) Steering tie rod socket unit
(2) Fixed ring
(3) Dust cap
(4) Lock
(5) Check nut
(6) Tie rod ripple cowl hoop
(7) Ripple cowl
(8) Steering box shell ripple cowl clamp
(9) Lock nut
(10) Tie rod in band ball
(11) Limiting stopper
(12) Circlet
(13) Facing ring
(14) Searing ring
(15) Bearing
(16) Nut
(17) Cover cap
(18) Lock nut
(19) Dust cap
(20) Circlet
(21) Tie rod end
(22) Check nut
(23) Tie rod ripple cowl hoop
(24) Ripple cowl
(25) Steering box
(26) Tie rod in band ball unit
(27) Limiting stopper
(28) Tube
(29) Oil pipe clip
(30) Hydraulic piping
(31) Hydraulic piping
(32) Trust sealing ring

Power steering service schematic diagram



Steering system fizzy noise

Step		Measure	Yes	No
Identification: Fizzy noise is heard during Engine running or steering wheel turning				
1	If the fizzy noise becomes loud When comparing with other normal vehicle?		TO step 2	System perfect
2	If the fizzy noise becomes loud? If steering fluid level is too low?		TO step3	TO step4
3	Fill fluid into the system. Does customer still complain?		TO step1	System perfect
4	Is the noise from inside of vehicle?		TO step5	TO step7
5	The noise may enter passenger compartment through outlet of front instrument panel.		TO step6	TO step7
6	Repair or replace steering pillar seal. Does customer still complain?		TO step1	System perfect
7	Make sure the lay for steering hose and pipe is correct (not touch with front instrument panel). Repair or replace hose and pipe if necessary. Does customer still complain?		TO step8	System perfect
8	Confirm The source of noise. Check steering pump and steering institute. Repair or replace parts if necessary. Does customer still complain?		TO step1	System perfect

Steering system chatter noise

State	Measure
Power steering system piping wear	Ensure power steering wear refer hydraulic piping replace
Steering box looseness	Fixture steering box nut torque refer fastener specifications
Tie rod one end or both ends looseness	Repair or replace tie rod end if necessary
Steering universal joint looseness	Repair or replace the universal joint refer if necessary

Power steering box diagnosis

Fizzy noise

Some noise will be heard during steering in fixed place under conventional condition.
Check if any leakage for system.
Check if air in system.
Turn sharply needs too much force in short time.
Check if any leakage for inner pressure.
Check if the pressure in the pump is nor enough.
Check if the fluid level is too low.

Power steering box and steering pump leak

Following symptoms show the leakage in system.
Obvious fluid leak on steering pivot or pump.
Loud noise is heard during park brake or cooling engine.
Lost power steering when park brake.
Heavy steering.
Check procedure
Go on following steps when check outside leak in system:

1. Wipe doubt section.
2. Check if too much fluid in the tank.
3. Check if following situations appear in system.

Air mixed in fluid.
Over flow.

4. Check following parts:

Hose connector.
O-ring

5. Confirm leaking position with following methods:

5.1 Turn off engine.
5.2 Wipe whole system.
5.3 Check fluid level in tank.
Fill fluid if necessary.
5.4 Start engine.

Points of attention:

Don't turn steering to the end and keep on. It will damage pump.
5.5 Ask assistant to turn steering left/right for several times.
5.6 Confirm leaking position and fix.
6. Go to following steps if repairing
6.1 Clean leaking position before removing
6.2 Replace the seal
6.3 Check if the seal is broken.
6.4 Screw bolts to specified torque.
6.5 Fill fluid to system.
Full filling/draining air
6.6 Draining air in system

Power steering box diagnosis procedure

1. Check if any leakage around connector.
2. Replace steering pivot if leak appears between following parts

Wrest lever
Input shaft

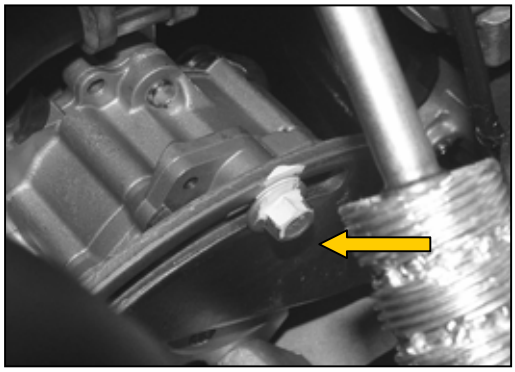
3. Replace pivot if leak appears on driver's side and is not affected by steering.
4. Replace pivot if leak appears on top cover and spray fluid when steering turn to left end.
Replace transmission shaft if there are serious corrosion dots on the shaft.
Clear the shaft surface with cloth if the corrosion on seal area is tiny.
Replace the shaft if there still is leakage after clearing.
Suggestion to replace seal
Following parts needs special seal:
Steering pivot
Drive shaft of pump
Go to following steps if one of above leaks appears:

1. Check seal section.
2. Clear seal section.
3. Replace seal.

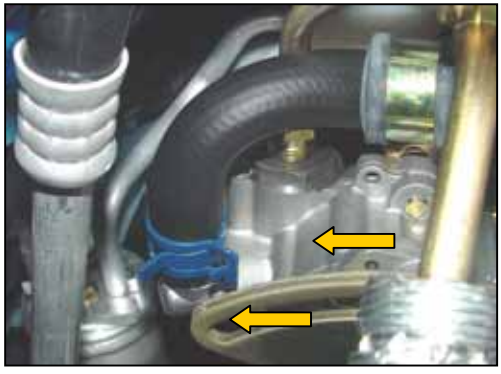
Power steering pump replace

Disassembly procedure

1. Remove transmission belt and loosen adjust bolts



2. Remove high-pressure hose and pipe from steering pump. The fluid will flow into the container. Please observe the safety regulation.
3. Remove the pump from front support.



Steps of installation

1. Put the pump on the support]

Fixture: 22-28Nm.

2. Install strengthen transmission belt.
3. Connect high-pressure hose and pipe on steering pump again.

Power steering

Disassembly procedure

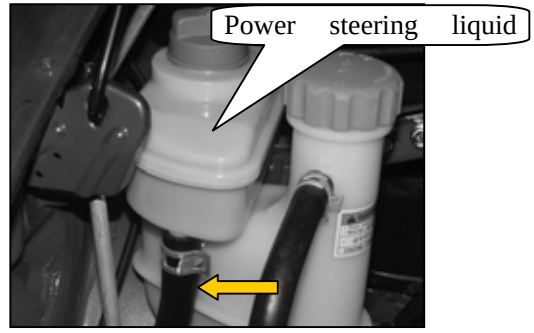
1. Loosen two connectors and remove out.
2. Remove tank from support.

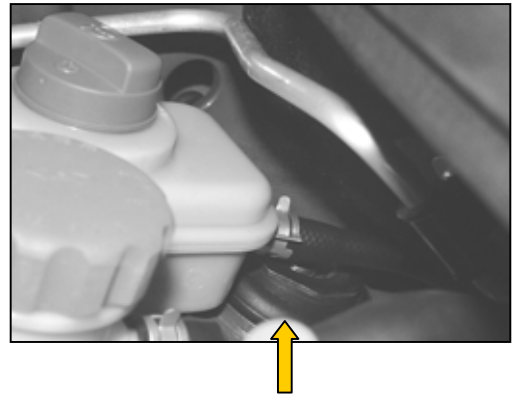
Points of attention

Residual fluid will flow out into the container.

Steps of installation

1. Put the tank into support and screw bolts. Connect two hoses and fix clamp.
2. Check if any leakage in system.





Rinse power steering system

Attention: Use suitable steering fluid when filling or replacing fluid, otherwise it will damage hose and seal.

1. Lift vehicle to run wheel freely.
2. Suck out fluid from tank.
3. Remove fluid hose from connector.
4. Insert outlet of hose into tank.
5. Put hose into container.
6. Run engine at idle. Ask assistant to fill fluid into tank.
7. Turn steering wheel left and right.

Attention: Don't turn to end for starring wheel to keep on. Otherwise it will cause over heat for system or damage pump and pivot.

8. Continues to drain out all old fluid.
9. Resin system with 0.9L new fluid.
10. Check if all fluid is drained out.
11. Remove the cock of pump.

Points of attention:

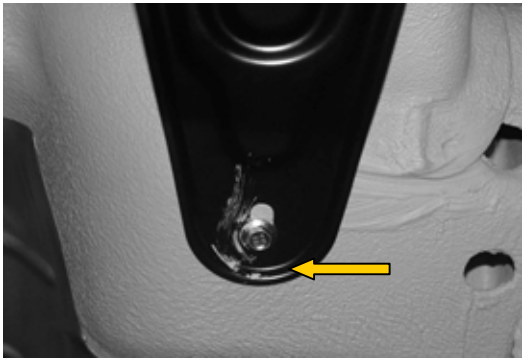
Don't use the fluid drained out.

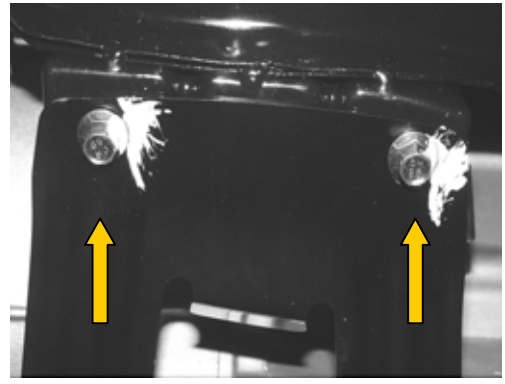
12. Connect hose and tank.
13. Turn off engine.
14. Fill fluid into tank.
15. Check if any leak in tank.
16. Drain out air of system.

Power steering box replace

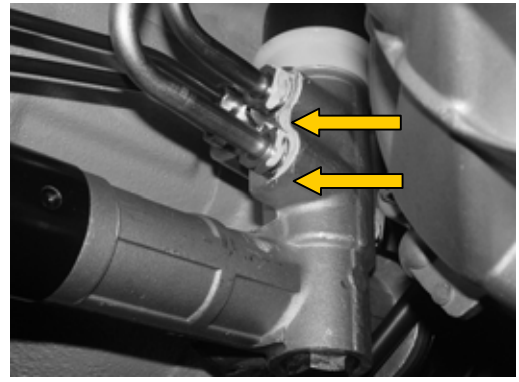
Disassembly procedure

1. Remove 3 bolts first.

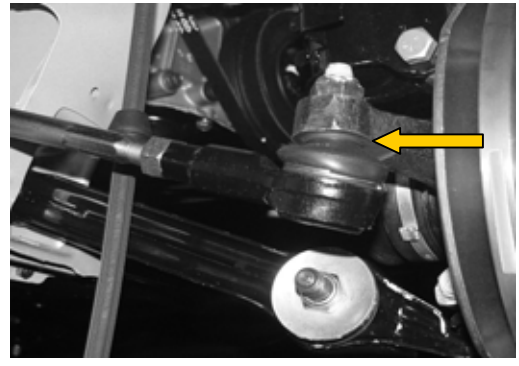


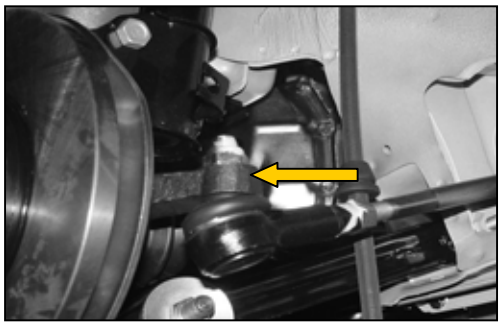


2. Loosen nuts on hose. Note to collect fluid.

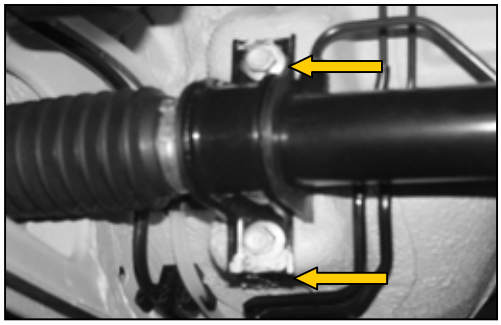


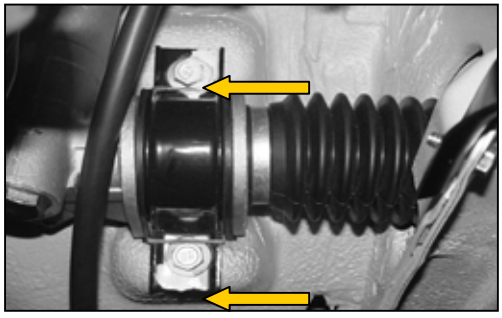
3. Remove bolts on left/right transverse lever.



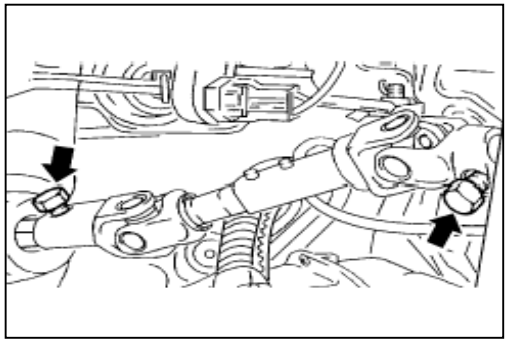


4. Remove bolts on pivot.

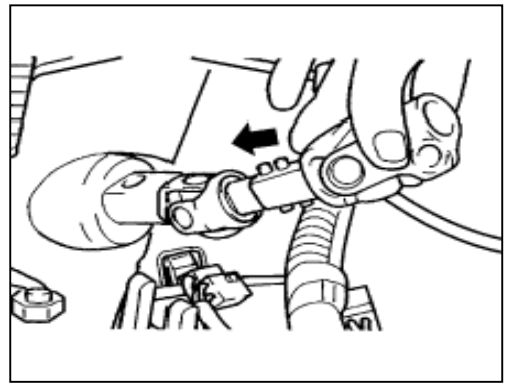




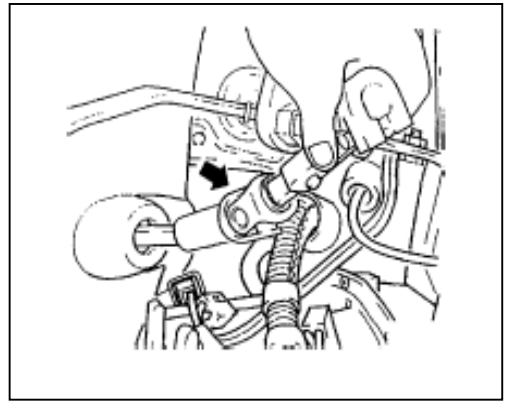
5. Loosen two bolts on steering node.



6. Push lower end of node to side of steering pivot to disconnect up end with steering pillar.



7. Remove steering node assembly.



8. Remove steering assembly.